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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/533,663	05/03/2005	Naohide Wakita	10873.1677USWO	6214
53148	7590	06/30/2006	EXAMINER	
HAMRE, SCHUMANN, MUELLER & LARSON P.C.			ROJAS, OMAR R	
P.O. BOX 2902-0902			ART UNIT	PAPER NUMBER
MINNEAPOLIS, MN 55402			2874	

DATE MAILED: 06/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/533,663

Applicant(s)

WAKITA ET AL.

Examiner

Omar Rojas

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-21 and 24-29 is/are rejected.
- 7) ☒ Claim(s) 10, 22, and 23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 0505.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: Detailed Action.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The prior art documents submitted by Applicant(s) in the Information Disclosure Statement(s) ("IDS") filed on May 3, 2005 have all been considered and made of record (note the attached copy of form(s) PTO-1449).

Specification

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

4. Claim 14 is objected to because of the following informalities: Claim 14 recites the limitation "each pixel" but does not provide a proper antecedent basis for this term as used in the claim. Appropriate correction is required.
5. Claim 16 is objected to because of the following informalities: Claim 16 recites the limitation "the core" but does not provide a proper antecedent basis for this term as used in the claim. Appropriate correction is required.
6. Claim 21 is objected to because of the following informalities: Claim 21 recites the limitation "each pixel" but does not provide a proper antecedent basis for this term as used in the claim. Appropriate correction is required.

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7. Claim 25 is objected to because of the following informalities: Claim 25 recites the limitation "the actuator" but does not provide a proper antecedent basis for this term as used in the claim. Appropriate correction is required.

8. Since no additional device structure is positively recited by claims 14 and 21, no patentable weight has been given to their limitations.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

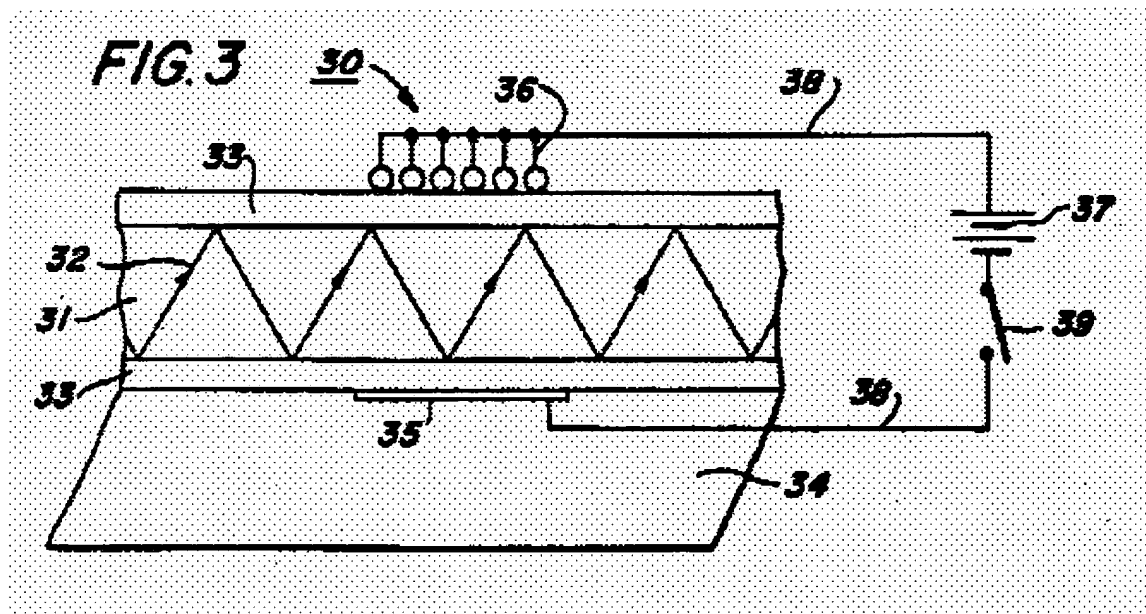
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-3, 5, 8, 12, and 14 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Patent No. 4,128,299 to Maher.

In re claim 1, Maher discloses a display element comprising a light source for providing light 13/25/32 and a waveguide that propagates a light 13/25/32 emitted from the light source,

wherein the light 13/25/32 propagated in the waveguide is extracted to outside from a waveguide lateral face, and wherein the light is extracted out of the waveguide from the waveguide lateral face by changing a shape of the waveguide lateral face (e.g., see Figures 2-5).

Figure 3 of Maher is reproduced below.



In re claim 2, Maher shows a plurality of actuators 36 that change a shape of the waveguide, wherein the shape of the waveguide lateral face is changed by selectively operating the actuators 36 to extract the light out of the waveguide from the waveguide lateral face.

In re claim 3, the waveguide comprises a core 31 and a cladding 33 formed along one lateral face of the core 31, wherein the actuators are attached 36 to the cladding and the shape of the waveguide lateral face is changed by deforming the actuators.

In re claim 5, the actuators 36 are attached to the waveguide lateral face, and wherein the shape of the waveguide lateral face is changed by deformation of the actuators (col. 5, lines 39-52).

In re claim 8, the actuators 36 are round filaments and therefore comprise a convex portion, and wherein the shape of the waveguide lateral face is changed by applying pressure to the

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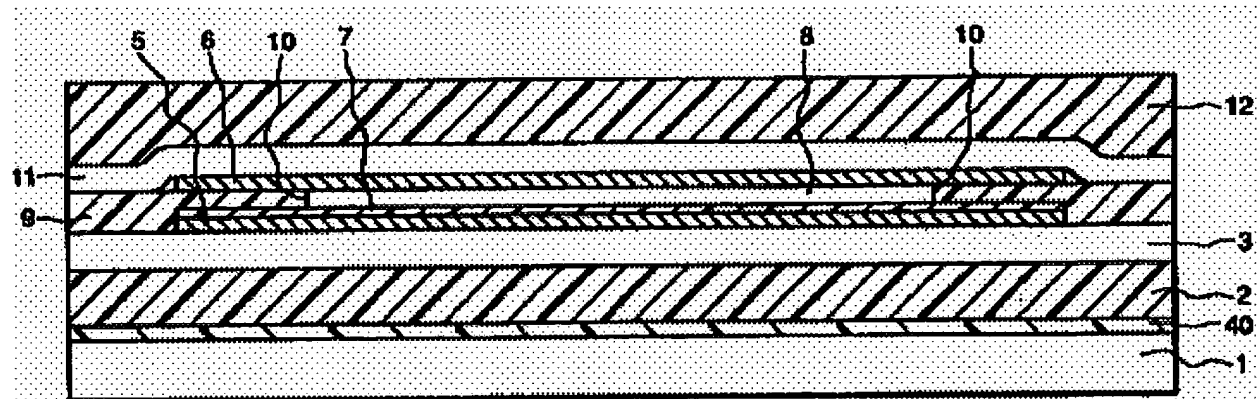
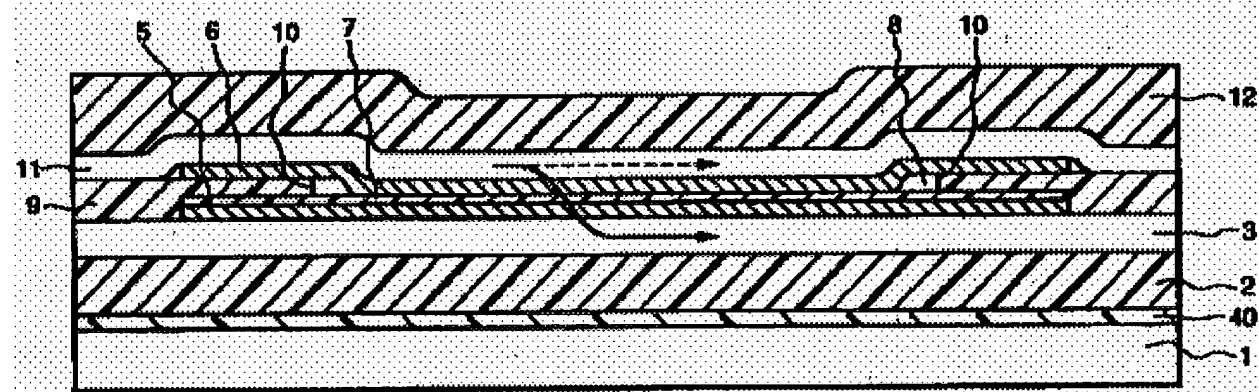
waveguide lateral face with the convex portion (col. 5, lines 39-52).

In re claim 12, the recited limitations are disclosed by Maher at col. 4, lines 39-50.

In re claim 14, since no additional device structure is positively recited by claim 14, no patentable weight has been given to this claim.

11. Claims 1-7, 9, 11, 12, and 14 rejected under 35 U.S.C. 102(b) as being clearly anticipated by Patent No. 5,367,585 to Ghezzi et al. ("Ghezzi").

In re claim 1, Ghezzi discloses a display element (e.g., see Figures 1a-1b) comprising a light source for providing light and a waveguide that propagates a light emitted from the light source, wherein the light propagated in the waveguide is extracted to outside from a waveguide lateral face, and wherein the light is extracted out of the waveguide from the waveguide lateral face by changing a shape of the waveguide lateral face. Figures 1a-1b of Ghezzi are reproduced below.

**FIG. 1a****FIG. 1b**

In re claim 2, Ghezzi shows a plurality of actuators 5/6/7 that change a shape of the waveguide, wherein the shape of the waveguide lateral face is changed by selectively operating the actuators 5/6/7 to extract the light out of the waveguide from the waveguide lateral face.

In re claim 3, the waveguide comprises a core 11 and a cladding 8/9 formed along one lateral face of the core 11, wherein the actuators 5/6/7 are attached to the cladding 8/9 and the shape of the waveguide lateral face is changed by deforming the actuators.

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In re claim 4, the light is extracted out of the waveguide by deforming at least a portion of the core 11 of the waveguide as seen above.

In re claim 5, the actuators 5/6/7 are attached to the waveguide lateral face, and wherein the shape of the waveguide lateral face is changed by deformation of the actuators as seen above.

In re claims 6-7, the embodiment shown in Figures 3a-3b of Ghezzi meets all the recited limitations.

In re claim 9, the actuators comprise: an electrode film 6 arranged at the waveguide lateral face, and an external electrode film 5 that is in opposition to and adjacent to the waveguide, wherein the shape of the waveguide lateral face is changed by an electrostatic force produced by applying a voltage between the external electrode film 6 and the electrode film 5.

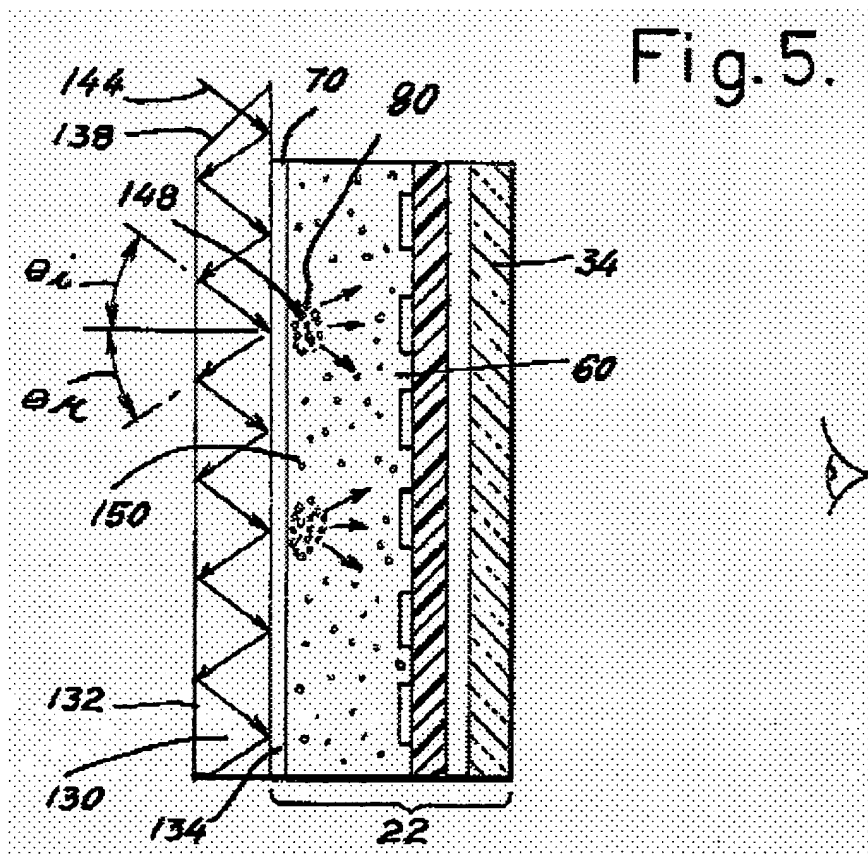
In re claims 11-12, the waveguide core 11 is elastic and deforms to extract light out of the waveguide recited as seen in Figures 1a-1b.

In re claim 14, since no additional device structure is positively recited by claim 14, no patentable weight has been given to this claim.

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12. Claims 1, 15-19, 21, and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Patent No. 4,218,302 to Dalisa et al. ("Dalisa"), cited in the IDS.

In re claim 1, Dalisa discloses a display element (e.g., see Figure 5) comprising a light source for providing light and a waveguide 130 that propagates a light emitted from the light source, wherein the light propagated in the waveguide is extracted to outside from a waveguide lateral face. No patentable weight is given to the rest of claim 1 since "wherein the light is extracted out of the waveguide ... by changing a shape of the waveguide lateral face" does not specify any additional structure but merely recites a functional recitation and/or intended use. Fig. 5 of Dalisa is reproduced below.



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In re claim 15 the waveguide comprises a waveguide electrode film 70 on the waveguide lateral face, the display element further comprising an opposing electrode film 50/44 that opposes the waveguide electrode film, and particles 68/80 arranged between the waveguide electrode film and the opposing electrode film.

In re claim 16, the waveguide 130 has a core.

In re claims 17 and 18, the particles 68/80 are both electrically charged and magnetic.

In re claim 19, the surface tension of the waveguide electrode film 70 and the surface tension of the particles 68/80 would inherently differ in Dalisa because they are made of different physical materials. The electrode film 70, for example, comprises indium oxide while the particles 68/80 comprise pigment particles. Pigment particles are known to comprise many different materials such as bariums sulfate, cadmium red, cadmium sulfo-selenide, etc.. *See also* Patent No. 3,612,758 at col. 3, lines 47-72 which gives examples of different materials used for pigment particles. Therefore, the limitation specified by claim 19 is considered inherently present in Dalisa.

In re claim 21, since no additional device structure is positively recited by claim 21, no patentable weight has been given to this claim.

In re claim 28, the active matrix elements are shown in Fig. 3 of Dalisa.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maher as applied to claim 2 above.

Maher discloses the claimed invention except for a transparent gel. Maher does teach that his waveguide may be formed from "any suitable material." Maher, col. 4, lines 33-35. It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to use transparent gel for the waveguide of Maher, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

15. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dalisa as applied to claim 15 above, and further in view of Patent No. 4,708,914 to Kamijo ("Kamijo").

Dalisa discloses the claimed invention except for a coating material applied to the waveguide electrode film 70. Kamijo shows a protective coating material 24 applied to a waveguide electrode film 23 at Fig. 2. The motivation for combining Kamijo with Dalisa is to prevent damage to the electrode. *See* Kamijo at col. 1, lines 61-68. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to obtain the invention specified by claim 20 by combining Kamijo with Dalisa.

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16. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dalisa as applied to claim 1 above, and further in view of Zhou et al., "Waveguide Panel Display Using Electromechanical Spatial Modulators", SID 98 Digest, pages 1022-1025, cited in the IDS.

Dalisa discloses the claimed invention except for a 3-color LED or a 3-color laser. The Zhou et al. articles discloses using a 3-color LED to inject light into a waveguide at pages 1024-1025. The motivation for combining Zhou with Dalisa is to achieve a full-color display using reliable LEDs. *See* Zhou at page 1025. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to obtain the invention specified by claim 24 by combining Zhou with Dalisa.

17. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dalisa as applied to claims 1 and 15 above, and further in view of Patent No. US 6,369,867 B1 to Ge.

Dalisa discloses the claimed invention except for a light source drive circuit for driving the light source, an actuator drive circuit for applying a voltage between the waveguide electrode film and the opposing electrode film, and a control circuit that controls the light source drive circuit and the particle drive circuit. The Ge patent, on the other hand, discloses a light source drive circuit 736 for driving a light source and a drive/control circuit 750 that controls both the light source drive circuit and an actuator drive circuit. The motivation for combining Ge with Dalisa is to provide active display capability with sequential addressing of the entire display. *See* Ge at col. 8, lines 18-27. Therefore, it would have been obvious to one of ordinary skill in the art

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at the time of the claimed invention to obtain the invention specified by claims 25 and 26 by combining Ge with Dalisa.

18. Claims 27 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maher as applied to claim 14 above, and further in view of Patent No. US 6,912,082 B1 to Lu et al. ("Lu").

Maher discloses the claimed invention except for an active matrix element comprising a TFT that controls the respective actuators 36. The Lu patent, on the other hand, discloses an active matrix element 140 comprising a TFT that controls a respective actuator 115. One motivation for combining Lu with Maher would be to minimize the size and voltage requirements of the actuators in Maher using micro-electro-mechanical ("MEMS") technology. *See* Lu at col. 2, lines 30-35. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to obtain the invention specified by claims 27 and 29 by combining Lu with Maher.

Allowable Subject Matter

19. Claims 10 and 22-23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

20. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 10, the primary reason for allowance of the claim is the inclusion of the external electrode film comprises a convex portion at the waveguide lateral face, and a shape of the waveguide lateral face is changed by the convex portion of the external electrode film applying pressure to the waveguide lateral face by using the electrostatic force. Regarding

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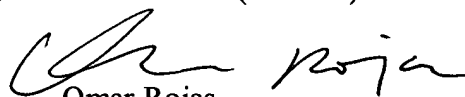
claims 22-23, the primary reason for allowance of the claims is the inclusion of a particle that is fluorescent. In the Examiner's opinion it would not have obvious to modify the Dalisa patent to use fluorescent particles.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Omar Rojas whose telephone number is (571) 272-2357. The examiner can normally be reached on Monday-Friday (12:00PM-8:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rod Bovernick, can be reached on (571) 272-2344. The official facsimile number for regular and After Final communications is (571) 273-8300. The examiner's RightFAX number is (571) 273-2357.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Omar Rojas
Patent Examiner
Art Unit 2874

or
June 27, 2006



Rodney Bovernick
Supervisory Patent Examiner
Technology Center 2800